

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A turbine engine component comprising:

an airfoil portion having a span;

at least one cooling passageway in said airfoil portion extending from a root portion of said airfoil portion to a tip portion of said airfoil portion; and

a plurality of turbulation promotion devices in said at least one cooling passageway, said turbulation promotion devices comprising a plurality of spaced apart pairs of arcuately shaped trip strips, said turbulation promotion devices having a P/e which varies along the span of said airfoil portion, where P is the pitch between adjacent ones of said turbulation promotion devices and e is the height of each said turbulation promotion device.

2. (original) A turbine engine component according to claim 1, wherein the P/e ratio of said turbulation promotion devices is lower in a midspan region of said at least one cooling passageway than in an end region of said at least one cooling passageway.

3. (original) A turbine engine component according to claim 2, wherein said P/e ratio is in the range of from 5 to 30 in said midspan region.

4. (original) A turbine engine component according to claim 2, wherein said P/e ratio is in the range of from 5 to 30 in said end region.

5. (original) A turbine engine component according to claim 1, wherein said P/e ratio is lower in a midspan region of said at least one cooling passageway and is higher in non-midspan regions of said at least one cooling passageway.

6. (original) A turbine engine component according to claim 1, wherein said pitch in a region near said root portion varies from 0.050 to 0.500 inches.

7. (original) A turbine engine component according to claim 1, wherein said pitch in a region near said root portion varies from 0.350 to 0.362 inches.

8. (original) A turbine engine component according to claim 1, wherein said pitch in a mid-span region varies from 0.050 inches to 0.500 inches.

9. (original) A turbine engine component according to claim 1, wherein said pitch in a mid-span region varies from 0.110 to 0.180 inches.

10. (original) A turbine engine component according to claim 1, wherein said pitch in a region near said tip portion varies from 0.050 inches to 0.500 inches.

11. (original) A turbine engine component according to claim 1, wherein said pitch in region near said tip portion varies from 0.180 inches to 0.290 inches.

12. (original) A turbine engine component according to claim 1, wherein said height varies from 0.004 inches to 0.050 inches.

13. (original) A turbine engine component according to claim 1, wherein said height varies from 0.008 inches to 0.010 inches.

14. (currently amended) A turbine engine component according to claim 1, wherein said turbine blade has a plurality of cooling passageways, each said cooling passageway having a plurality of turbulation promotion devices, and said turbulation promotion devices in each of said cooling passageways having a P/e ratio which varies along the span of the airfoil portion.

15. (original) A turbine engine component according to claim 1, wherein said component comprises a turbine blade.

16. (original) A turbine engine component according to claim 1, wherein said at least one cooling passageway has a diameter D and the ratio of e/D is in the range of 0.05 to 0.30.

17. (currently amended) A method of manufacturing a turbine engine component comprising:

forming a component having an airfoil portion with a root portion, a tip portion and a span; and

fabricating at least one cooling passage in said component having a plurality of turbulation promotion devices having a P/e ratio which varies along the span of said component, where P is the pitch between adjacent ones of said turbulation promotion devices and e is the height of a respective turbulation promotion device, and

said fabricating step comprising forming said turbulation promotion devices as pairs of arcuately shaped trip strips which extend about walls of said at least one cooling passage.

18. (original) A method according to claim 17, wherein said fabricating step comprises providing a first region of each said cooling passage adjacent a root portion of said airfoil portion with turbulation promotion devices having a first P/e ratio and providing a mid span region of each said cooling passage with turbulation promotion devices having a second P/e ratio which is lower than said first P/e ratio.

19. (currently amended) A method ~~according to claim 18, wherein~~ for manufacturing a turbine engine component comprising:

forming a component having an airfoil portion with a root portion, a tip portion and a span;

fabricating at least one cooling passage in said component having a plurality of turbulation promotion devices having a P/e ratio which varies along the span of said component, where P is the pitch between adjacent ones of said turbulation promotion devices and e is the height of a respective turbulation promotion device;

said fabricating step further comprising providing a first region of each said cooling passage adjacent said root portion of said airfoil portion with turbulation promotion devices having a first P/e ratio and providing a mid span region of each said cooling passage with turbulation promotion devices having a second P/e ratio which is lower than said first P/e ratio; and

said fabricating step comprises further comprising providing a third region of each said cooling passage adjacent said tip portion of said airfoil portion with turbulation

promotion devices having a third P/e ratio which is greater than said second P/e ratio.

20. (original) A method according to claim 19, wherein said fabricating step further comprises providing said third P/e ratio so that it is greater than said first P/e ratio.

21. (original) A method according to claim 17, wherein said turbine component forming step comprises forming a turbine blade.

22. (original) A method according to claim 17, wherein said turbine component forming step comprises forming said turbine engine component by a casting technique.

23. (new) A turbine engine component comprising:

an airfoil portion having a span;

at least one cooling passageway in said airfoil portion extending from a root portion of said airfoil portion to a tip portion of said airfoil portion; and

a plurality of turbulation promotion devices in said at least one cooling passageway, said turbulation promotion devices having a P/e which varies along the span of said airfoil portion, where P is the pitch between adjacent turbulation promotion devices and e is the height of each said turbulation promotion device;

each said cooling passageway having a first region adjacent said root portion of said airfoil portion with a plurality of said turbulation promotion devices having a first P/e, a mid span region having a plurality of said turbulation providing devices having a second P/e ratio which is lower than said first P/e, and a third region adjacent said tip portion of said airfoil portion with a plurality of said turbulation promotion devices having a third P/e ratio which is greater than said second P/e ratio.

24. (new) A turbine engine component according to claim 23, wherein said third P/e ratio is greater than said first P/e ratio.

25. (new) A turbine engine component according to claim 1, wherein said turbulator promotion devices have a surface at an angle with respect to a flow of cooling fluid through a respective one of said cooling passageways.

26. (new) A turbine engine component according to claim 25, wherein said angle is in the range of from 30 to 70 degrees with respect to the flow.